

The US Healthcare System: Unavoidable Realities, Harsh Truths and Stark Choices

**Dr. George Poste, Del E. Webb Chair in Health Innovation
Arizona State University**

george.poste@asu.edu

What's next?

OPTIMISM IN TIMES OF UNCERTAINTY

INTERNAL OPERATIONS CONFERENCE

JULY 19-22 2009



**Keynote address:
Laguna Niguel, 20 July 2009**



A Few Current Challenges for the US Healthcare System

- **\$2.4 trillion dollar expenditures (2008):
16% of GDP (\$1 in every \$7)**
- **escalating and unsustainable fraction of GDP**
- **highest per capita expenditure in OECD**
- **\$510 billion cost of chronic disease**
- **2 million annual hospital-acquired infections**
- **2.5 million hospitalizations due to adverse Rx reactions**
- **highly variable treatment patterns**
- **slow diffusion of best practices**

US Government Healthcare Expenditures (2007)*

- **28% total revenues**
- **Medicare = 13% Federal budget = 20% US healthcare expenditures**
- **Medicaid = approx 22% of state expenditures**
 - **versus 21% for K-12, 10% for higher education, 8% transportation**
 - **increased from \$89 billion in 2000 to \$151 billion in 2007**
- **Medicare Trustees project Hospital Insurance Trust Fund will be exhausted in 2019**

*** From: M. Hartman et. al. (2009) Health Affairs 28,246**

Market Distortions and Perverse Incentives in Healthcare Delivery

- **focus on late-stage detection and intervention**
 - **high cost**
 - **low reversibility of chronic disease processes**
- **multiple reimbursements for fragmented (siloed) care versus integrated management of patient needs**
- **illness versus wellness**
- **inadequate social and economic incentives for wellness**

Fee-for-Service and Runaway Healthcare Costs

- **the invisible hand of Adam Smith is absent from healthcare**
- **terminal illness for governments, business and patients/consumers**
- **supply creates its own demand**
- **caregivers make more money by providing more care**
- **consumers don't select treatment choice**
- **caregivers don't consider cost in treatment decisions**
- **neither consumers nor caregivers evaluate cost or benefit and simply seek “maximum” care**

U.S. Healthcare Costs are Unevenly Distributed

- **0.5% patients consume 25% of healthcare budget**
- **1% consume 35%**
- **5% consume 60%**
- **10% consume 70%**
- **75% of cost is for patients with chronic diseases**
- **end-of-life care**

Source: Healthcare Reform Now

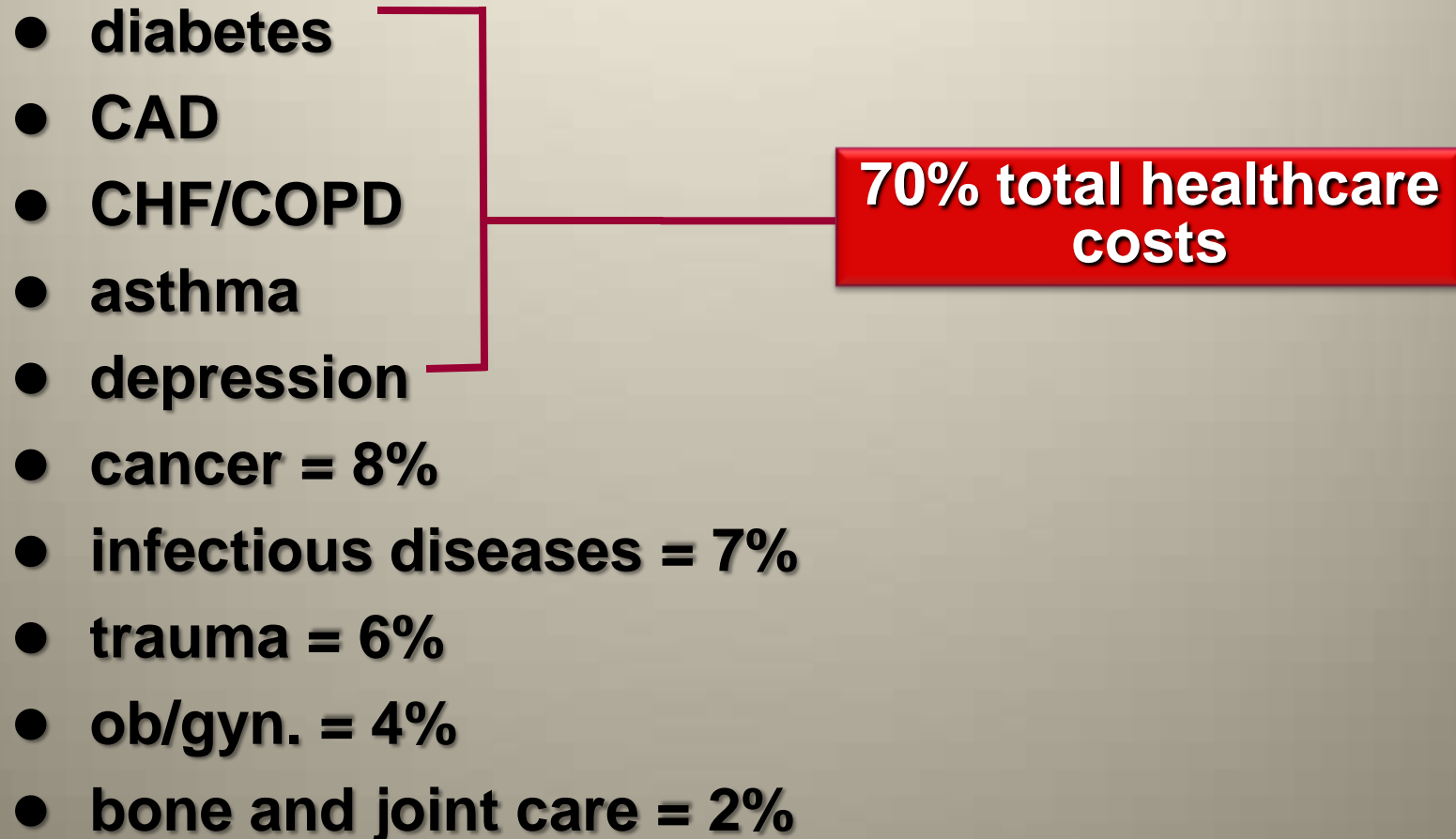
G. Halvorson,

Chairman and CEO

Kaiser Foundation Health Plan and Hospitals

Wiley, NY 2007 p.2

Five Chronic Diseases Impose the Highest Cost in Healthcare Expenditures

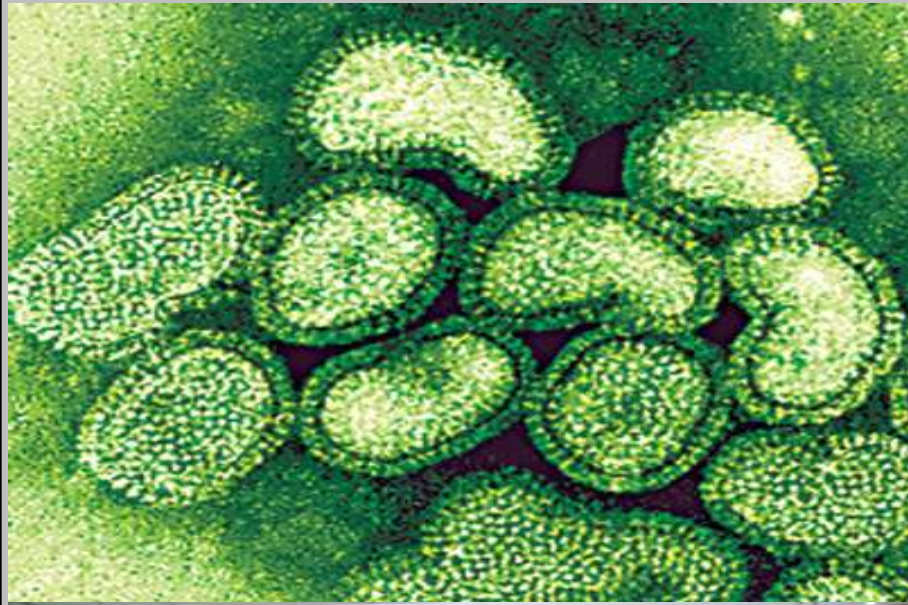


Demographic Trends and the Clinical and Economic Burden of Complex, Chronic Conditions/Co-Morbidities



- **23% Medicare beneficiaries have 5 or more conditions**
- **polypharmacy and AEs**
- **poor patient compliance**
- **multiple physician/venue encounters**
- **poor communication/coordination between siloed healthcare services**
- **procedure-based reimbursement versus care continuum integrated**

Swine Flu ("Hamageddon?")



The Strategic Future of Healthcare

A photograph of a road that splits into two paths, one leading to the left and one leading to the right. The road is paved and has yellow double lines in the center. The background shows a forested hillside under a clear sky. The text 'Economic Unsustainability' is overlaid on the left path, and 'Reform and Rational Care' is overlaid on the right path. The word 'or' is placed between the two paths, indicating a choice between the two outcomes.

**Economic
Unsustainability**

or

**Reform and
Rational Care**

**Confronting the Imbalance Between Infinite Demand
and Finite Resources**

Reasonable Expectations for Rational Healthcare

- what works
- why it works
- who it works for
- what works best
- when should it be used optimally
- validated evidence
- mechanism of action
- personalized medicine
- comparative effectiveness
- best practice guidelines, standard-of-care and malpractice

VALUE

Reforming health care

This is going to hurt





Mencken's First Law

**“For every complex problem,
there is always a simple solution
and it is almost always dead wrong”**

H.L. Mencken

Mencken's (Second) Law



- **“Whenever they tell you it’s not about the money.....it’s about the money.”**

Complex and Pervasive Problems in Healthcare with No Easy Solutions

- **different ‘value’ metrics for different constituencies**
 - **patients, physicians, payors, politicians**
- **public expectations and populist politics**
 - **zero-cost, zero-risk = zero care**
- **lack of transparency in costs, billing and reimbursement**
- **anachronistic institutional mechanisms for national health policy debate**

CHANGING MINDS AND CHANGING BEHAVIORS

OMB on Four Pillars of US Health Reform



- health information technology
- comparative effectiveness research
- prevention and wellness efforts
- financial incentives to provide better care and reduce unnecessary or excessive care



Peter Orszag, Director, OMB
Remarks at Institute of Medicine Workshop
Washington, DC, 21 May 2009
Quoted in “The Gray Sheet” 25 May 2009

**“We cannot, in a responsible sustainable way,
go to universal coverage unless we’re going to
take cost control seriously”**

**“I go where the money is. Most of the
increase in health spending comes from volume,
not price, so that’s the appropriate target.
By and large affecting price will have a
relatively small effect”**



**Dr. Ezekiel Emanuel
Senior Advisor, OMB
Presented at ASCO 30 May 2009
Cited in the Pink Sheet, 8 June 2009, p.7.**

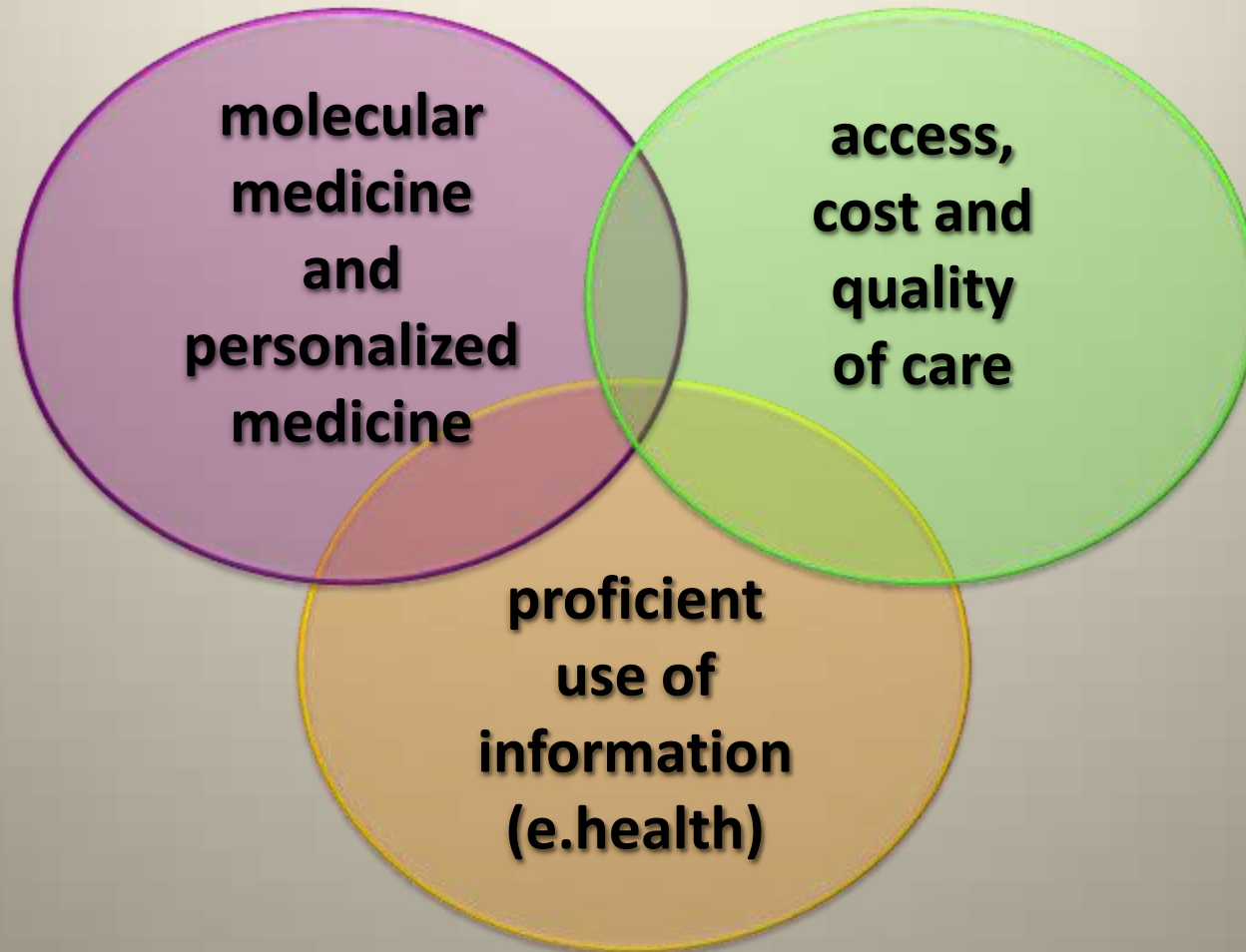
Defining New Value Propositions for Healthcare Delivery

- **social and economic value of reducing disease burden will rise**
 - **earlier disease detection and mitigation**
 - **rational Rx and guaranteed outcomes**
 - **integrated care management of complex chronic diseases**
 - **extension of working life**

Defining New Value Propositions for Healthcare Delivery

- prospering in an environment of increasing constraints
- managing the limit(s) of society's willingness and ability to pay for innovation
- controlling costs while enhancing quality and outcomes
- building new alliances to optimize value-driven outcomes
 - integration of Dx, Rx, Ix
- reliable information drives rational decisions

The Three Forces Shaping the Evolution of Healthcare



DEMONSTRATING VALUE



“Fortunately, treatment will be relatively inexpensive, since you have the generic form of the disease.”

Ignoring The Obvious in Clinical Practice

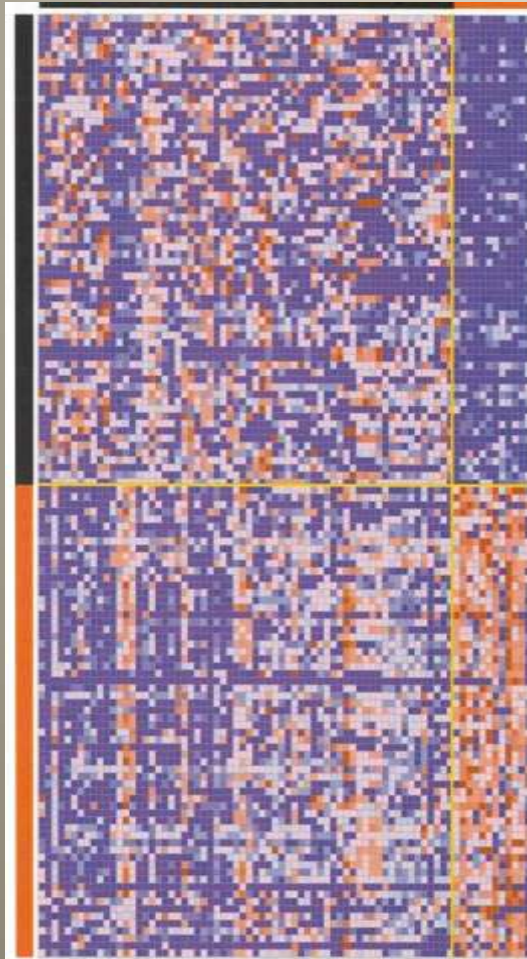


- diseases are not uniform
- patients are not uniform
- a “one-size fits all” Rx approach cannot continue



- inefficiency and waste of empirical Rx
- cost of futile therapy
- medical error and AEs

Rational Therapeutics and Personalized medicine: Key Drivers



Science

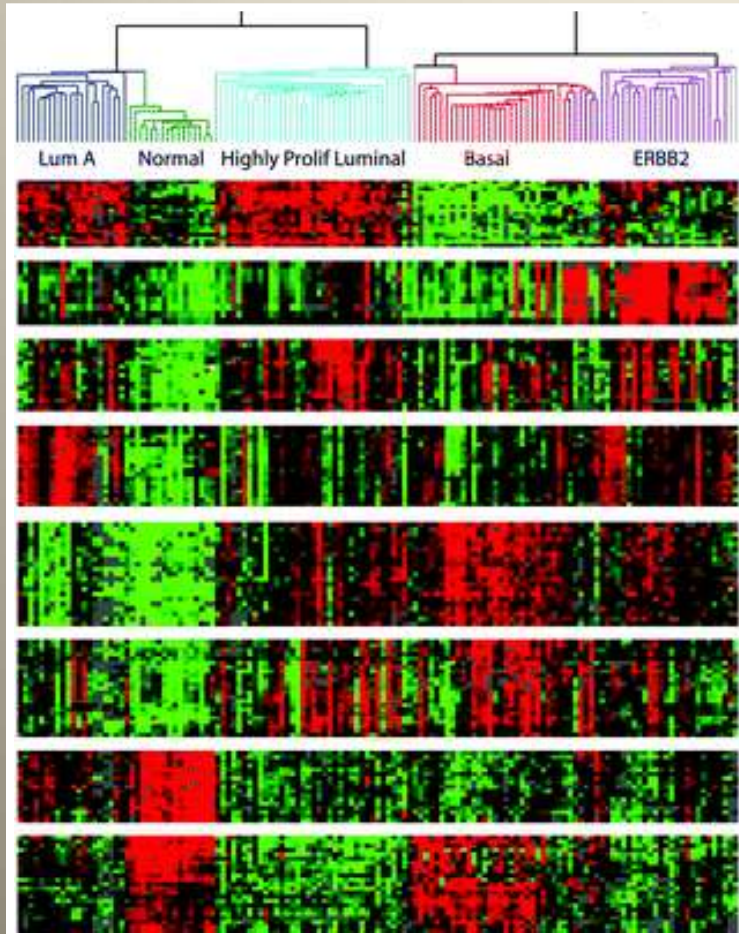


Policy



Cost and Outcomes

Targeted Therapeutics: Identification of Subtypes of Disease with Different Molecular Pathologies



- right Rx
for right
disease subtype

**Dx – Rx
combinations**

K-RAS Profiling and Anti-EGFR Monoclonal Antibody Therapy



- higher response in patients with K-RAS versus mutant-K-RAS
- estimated \$604 million/year savings (ASCO)



regulatory demand



clinical guidelines



- regulatory inertia



- payor adoption

The Emergence of Drug: Diagnostic Combinations

SELZENTRY™
(maraviroc) tablets



trofile™
CO-RECEPTOR TROPISM ASSAY

biosciences
monogram
The Mark of
Individualized Medicine

CAMPTO®
irinotecan



Invader® chemistry

THIRD WAVE
TECHNOLOGIES

COUMADIN®
(Warfarin Sodium Tablets, USP) Crystalline
1 mg 2 mg 2.5 mg 3 mg 4 mg 5 mg 6 mg 7.5 mg 10 mg



Bristol-Myers Squibb

Verigene® System



Nanosphere

5-Fluorouracil

tablets
Xeloda®
capecitabine



TheraGuide 5-FU®

A test to predict toxicity to 5-FU/capecitabine-based chemotherapy



MYRIAD®

Vectibix™
(panitumumab)
AMGEN

DxS Diagnostic
Innovations

Personalized Medicine

The Initial Era: Targeted Rx

- **opening era in linking disease molecular pathology to rational Rx**
- **increasing payor, regulatory and public pressures for reliable ID of Rx-responsive patients**
- **demand for Dx-Rx combinations will intensify**
- **Dx-Rx combination will become an obligate element of NDA/BLA submission and product labeling**
- **development of Dx-Rx combinations as intrinsic components of R&D programs for investigational Rx**

Molecular Diagnostics, Disease Subtyping and Pharmacogenomics

“Riches in the Niches”



- right diagnosis, the first time
- right Rx selection, the first time
- rise of Dx-Rx combination
- Rx approval and labeling/reimbursement only with obligate Dx?

Outcomes-Based Risk-Sharing Agreements (OBRAs)

UK: National Health Service

- full or partial refund for non-responders



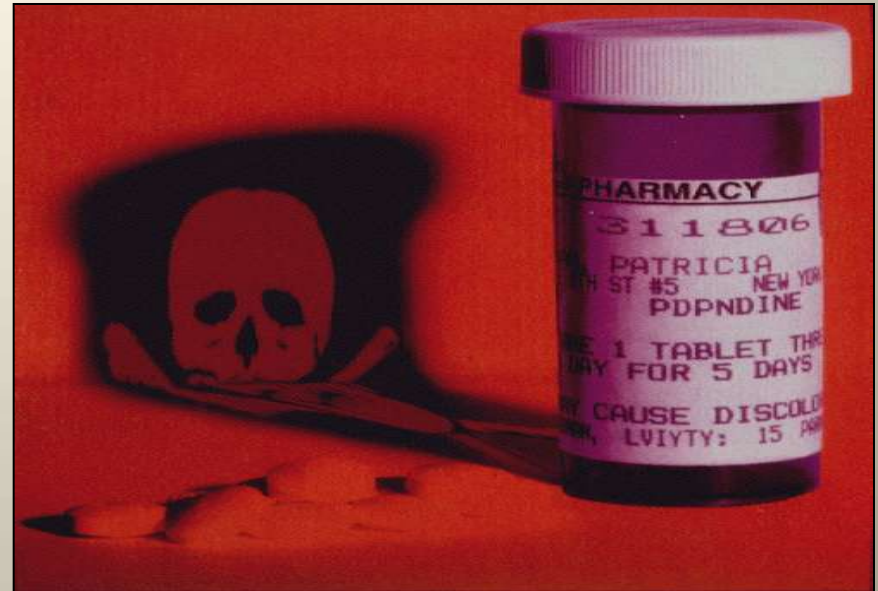
- four Rx cycles
- 50% reduction in serum M protein
- NHS continues to fund
- <50% response
company refunds
cost of Rx

Outcomes-Based Risk-Sharing Agreements (ORBAs) Come to the USA



- reimburse average treatment cost (not just Rx) for fractures incurred after 6 months therapy
- improved Hb1Ac levels in diabetics over one year increases Rx discount to Cigna

Pharmacogenetic Predisposition to Adverse Drug Reactions



- 1.5 to 3 million annual hospitalizations (US)
- 80 to 140 thousand annual deaths (US)
- est. cost of \$30-50 billion





**Alert
7/24/08**

- **update labeling for Abacavir (Ziagen) to require pre-therapy screening for HLA-B*5701 allele to avoid fatal hypersensitivity**

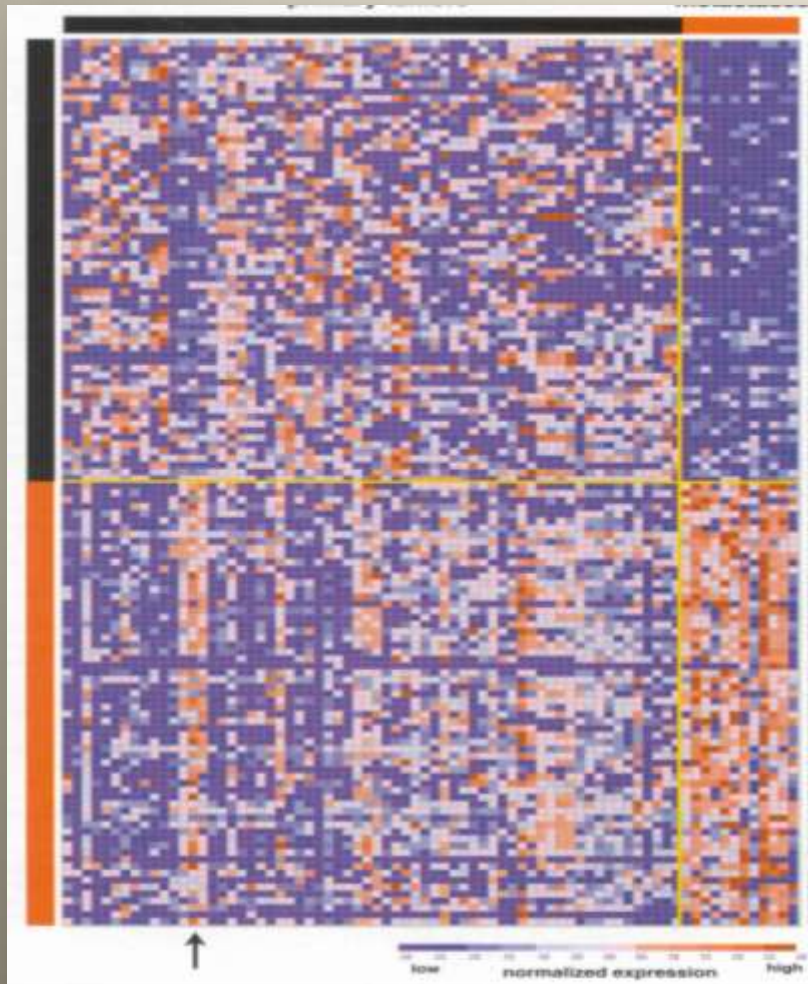


Table of Valid Genomic Biomarkers in the Context of Approved Drug Labels

http://www.fda.gov/cder/genomics/genomic_biomarkers_table.htm

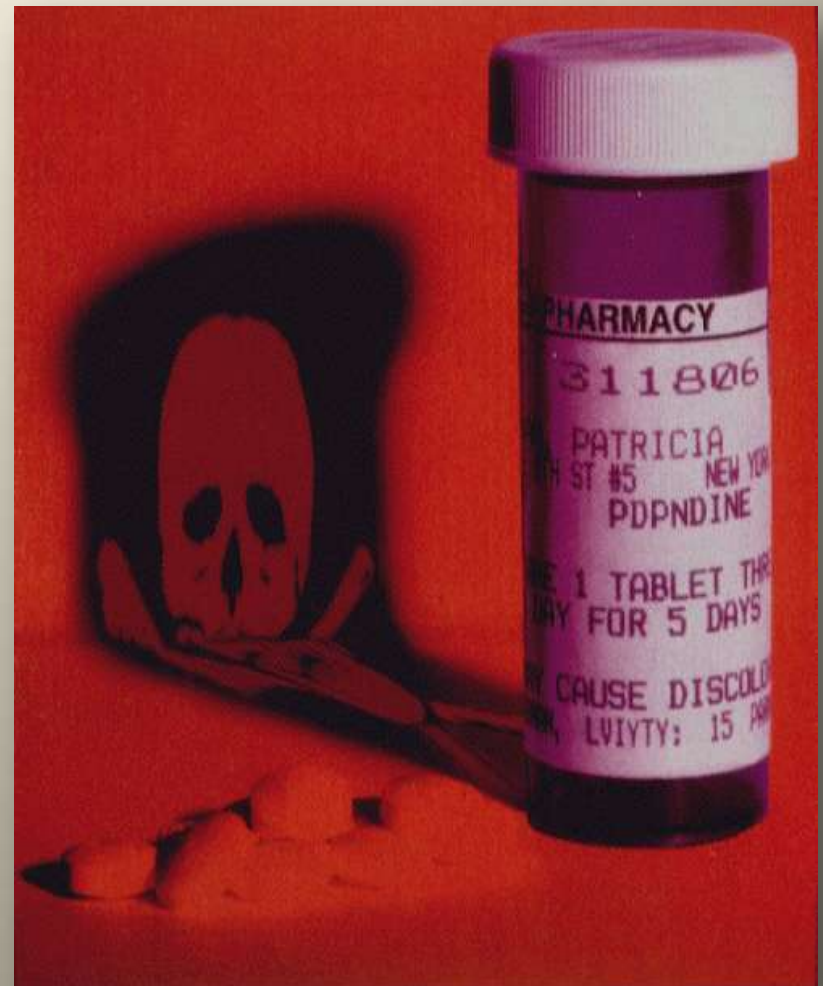
From Pharmaceuticals to Pharmasuitables

Disease Subtyping:



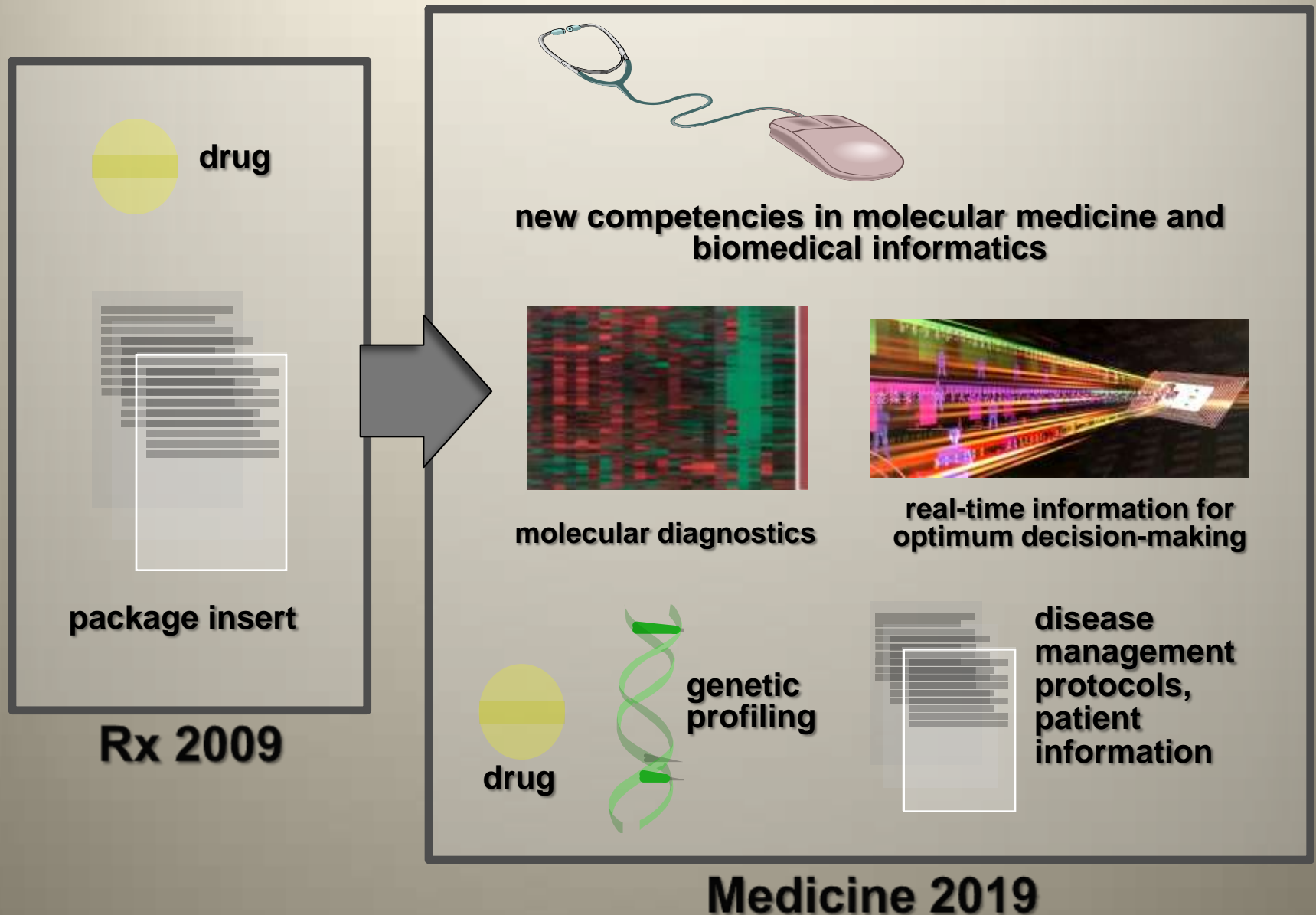
Right Rx for Right Disease

**Individual
Variation and AE risk**



Right Rx for Right Patient

The Evolution of Molecular Medicine and Information-Based Medicine: The Foundation for Rational Care and Personalized Medicine



Adoption of New Technologies in Healthcare

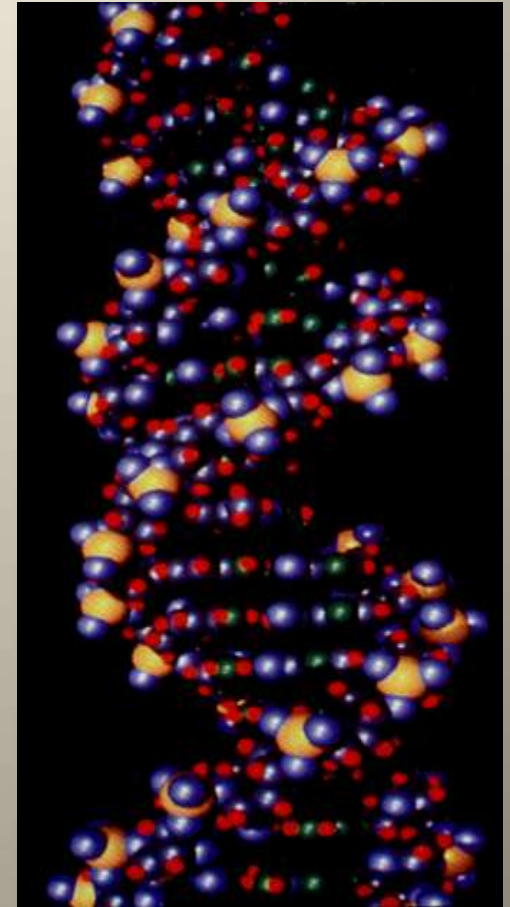
- not merely innovation in technology
- parallel evolution and adoption of new business, financial and organizational models
- complexity of harmonizing incentives for diverse constituencies
- critical role of public policies in defining market entry barriers
 - regulation, reimbursement
 - professional standards and sustaining status quo
 - administrative procedures
 - governance of third party health insurance payments
- cost-based, event-/procedure-based incentives versus integrated care and disease management

Reimbursement for Diagnostic Tests

- inadequate US Medicare coding and payment mechanisms
 - outmoded, out-dated, lacking in transparency, inconsistently applied
- inappropriate assignment of existing CPT codes to new tests
- off-label use but with tangible clinical benefits
- engagement of third party payers who derive economic/clinical value from new Dx

**VALUE-BASED REIMBURSEMENT
VERSUS
COST-BASED REIMBURSEMENT**

Personalized Medicine: Disease Predisposition Profiling



DNAdirect
Your Genes In Context



Consumer Genetics
Bringing Science Home

CyGene
LABORATORIES

GeneLink

GENECARETM
Medical Genetics Center



**GENETIC
TECHNOLOGIES, INC.**
DNA / FORENSIC / PATERNITY TESTING

genele

g-Nostics

AccessDNATM beta
know your genetics



Graceful Earth
Health Alternatives; Customized Dietary, Nutritional and Herbal Information



HealthCheckUSA

**INTERLEUKIN
GENETICS**

Empowering

MediChecks.com



23andMe

NEUROMARK

SURACELL
Personal Genetic HealthTM



The International

TLC-Wellbeing Clinic

Wellbeing through Science, Nutrition and TLC.

Est. 1987. Treating Clients in over 100 Countries.



Navigenics



KnomeTM



ScientificMatch.com
"The Science of Love"

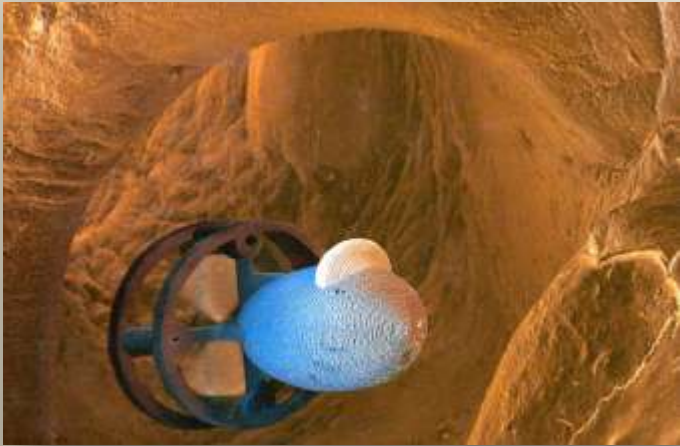
Consumer Genomics: Predisposition Risk Profiling for Late Onset, Multigenic Diseases

- **unproven validity of many claimed gene-disease associations**
- **communication of probabilistic risk**
- **health literacy and consumer response to 'risk' information**
- **effectiveness in motivating health improvements**
- **role of MD and/or genetic counselors in request/interpretation of test in varied care settings**
- **psychological impact on future behavior and knowledge of familial implications**

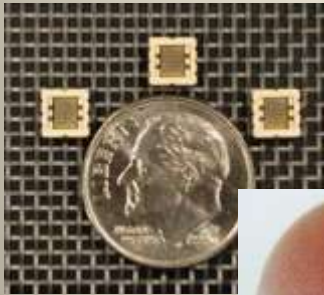
Personalized Medicine: A Broader Definition

**Health Status Monitoring
and the
Promotion of Wellness**

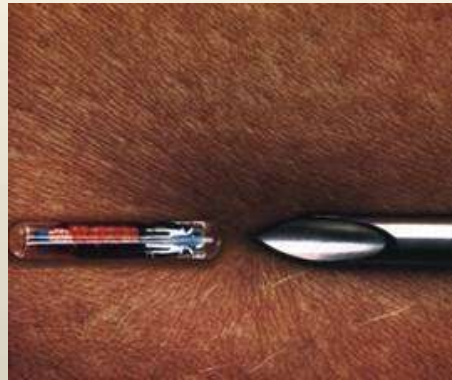
On Body: In Body Sensors/Devices For Real Time and Remote Monitoring of Individual Health Status



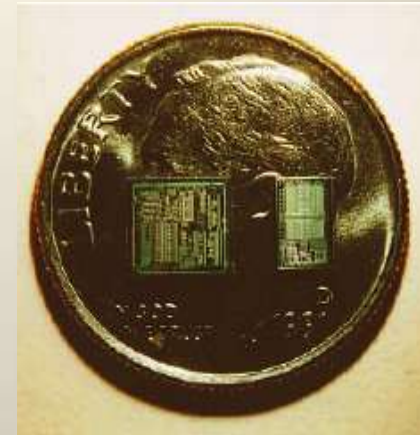
OBIBS and Body Area Networks (BAN's) for Remote Monitoring of Health



Microtags



In-Body Wireless Tags



Sensor on a Chip



**“Savings from broad-band remote monitoring
for all chronically ill patients
are potentially quite remarkable
....as much as 30 percent
of all hospital, out-patient and drug expenses”**

**Robert Litan
Kaufman Foundation December 2005**

**cited in: Advancing Healthcare Through Broadband
Internet Innovation Alliance White Paper 2007**

On Body: In Body Sensors and Devices

Healthcare

Objective

- remote monitoring of health status



Applications

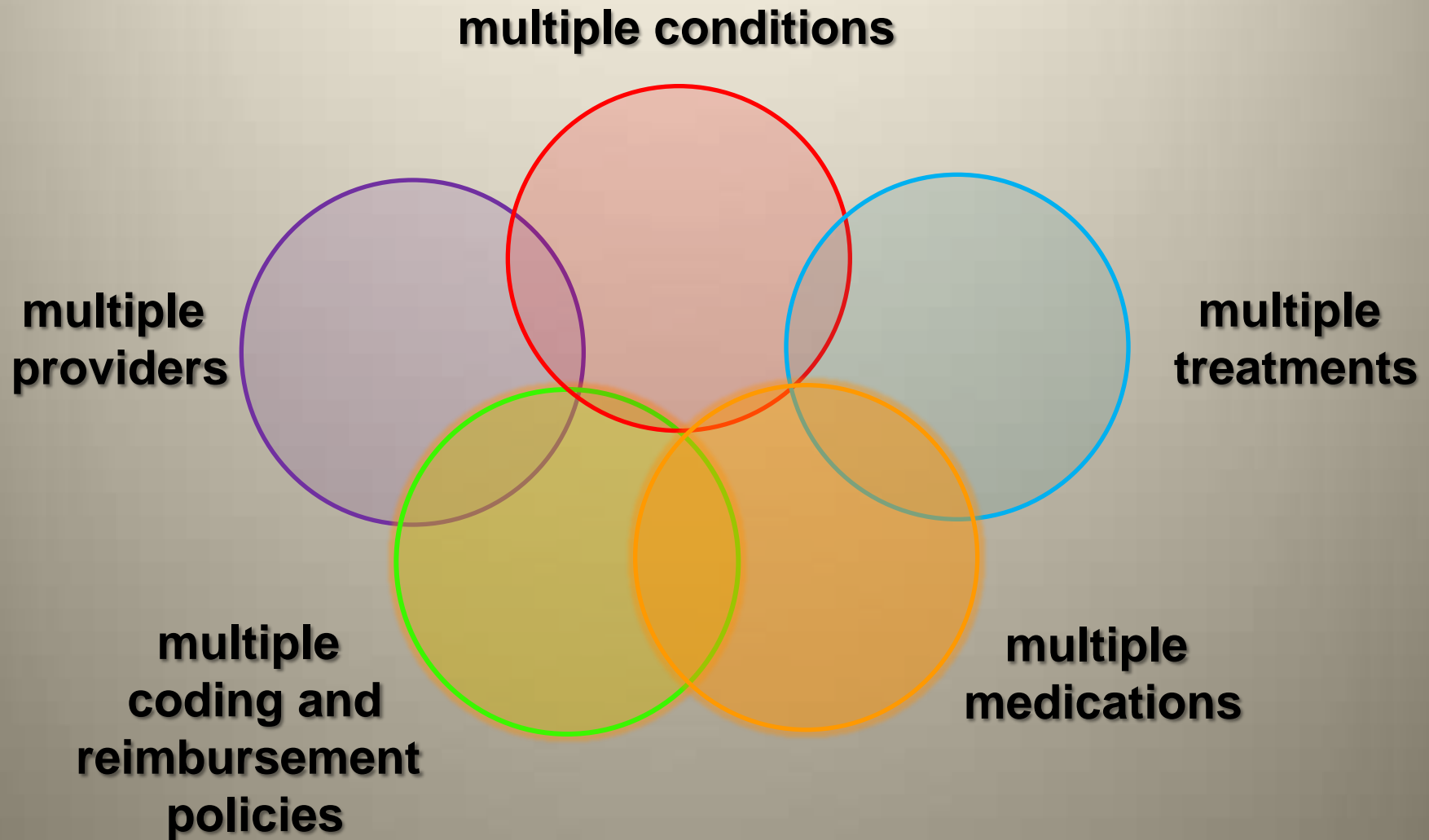
- multi-feature monitoring and broadband wireless networks
 - ubiquitous sensing
- enhanced autonomy for in-home aged
- proactive alerting and intervention to mitigate health incidents
- monitoring of patient compliance
- coupled linkage to remote Rx dispensing for efficient disease management

The Costs of Non-Compliance with Rx Regimens



- **\$177 billion projected cost**
- **20 million workdays/year lost (IHPM)**
- **40% of nursing home admissions**
- **projected 45-75% non-compliance (WHO)**
- **50-60% depressed patients (IHPM)**
- **50% chronic care Rx (WHO)**

Challenges in the Management of Complex Chronic Conditions and Co-Morbidities





Deloitte.

Connected Care

*Technology-enabled
Care at Home*

Produced by the
Deloitte Center
for Health Solutions



Audit. Tax. Consulting. Financial Advisory.

State of Technology in Aging Services According to Field Experts and Thought Leaders

By:

Majd Alwan, Ph.D.,
Center for Aging Services Technologies (CAST)
American Association of Homes and Services for the Aging (AAHSA)

and

Jeremy Nobel, M.D., M.P.H.,
Harvard School of Public Health

Report Submitted to: Blue Shield of California Foundation

February 2008

cast 
Center for Aging Services Technologies

Challenges to Moving Forward with the (Advanced) Medical Home Model for Coordinated Care

- **lack of suitably trained PCPs**
- **downward trend in PCP population**
- **insufficient capital, incentives and facileness of HIT infrastructure**
- **uncertain financial rewards and savings**
- **inadequate reimbursement policies for preventive care**
- **turf wars and tensions**
 - **care management**
 - **vendors/health plans**
 - **reduced revenues for hospital with significant PCP network**
 - **assignment of malpractice liabilities**



**BlueCross BlueShield
Association**

An Association of Independent
Blue Cross and Blue Shield Plans

The Pathway to Covering America



Ensuring Quality, Value and Access

2008

Seeking 'Quality' in Healthcare



Misaligned Reimbursement Incentives: Rewarding Process Versus Results



“You have a (healthcare) system that traps us into bad performance because it’s the only way you can bill”

**Hon. Newt Gingrich
Medical Device Daily (2009) 27 Jan. p8**

“If it isn’t billable – it isn’t going to happen!”

Knowing What Works (or Doesn't)

- Pervasive Inefficiencies and Errors in Healthcare Created by Empirical Care and Lack of Robust Outcomes and Performance Data



Knowing What Works (Or Doesn't!)

- patients have at best 50:50 chance of receiving most advisable care
- ineffective, redundant and inappropriate care
 - projected 30-50% of healthcare spending
- only 15% of clinical interventions validated by clinical trials/regulatory review
- wide geographic variations in quality and cost of care
- protracted 15 to 25 yr timeframe for adoption of best practice(s)

Evidence and Comparative Effectiveness Research (CER): The Foundation of Rational Healthcare Policy

- **urgent imperative to eclipse “the archeology of clinical practice”**
- **limited fraction of clinical interventions validated by rigorous analysis/evidence**
- **benefits/risks of new technology never fully known at launch**
- **evaluation in clinically-relevant context(s)**
- **cost of CER studies**
- **standard-of-care and malpractice**

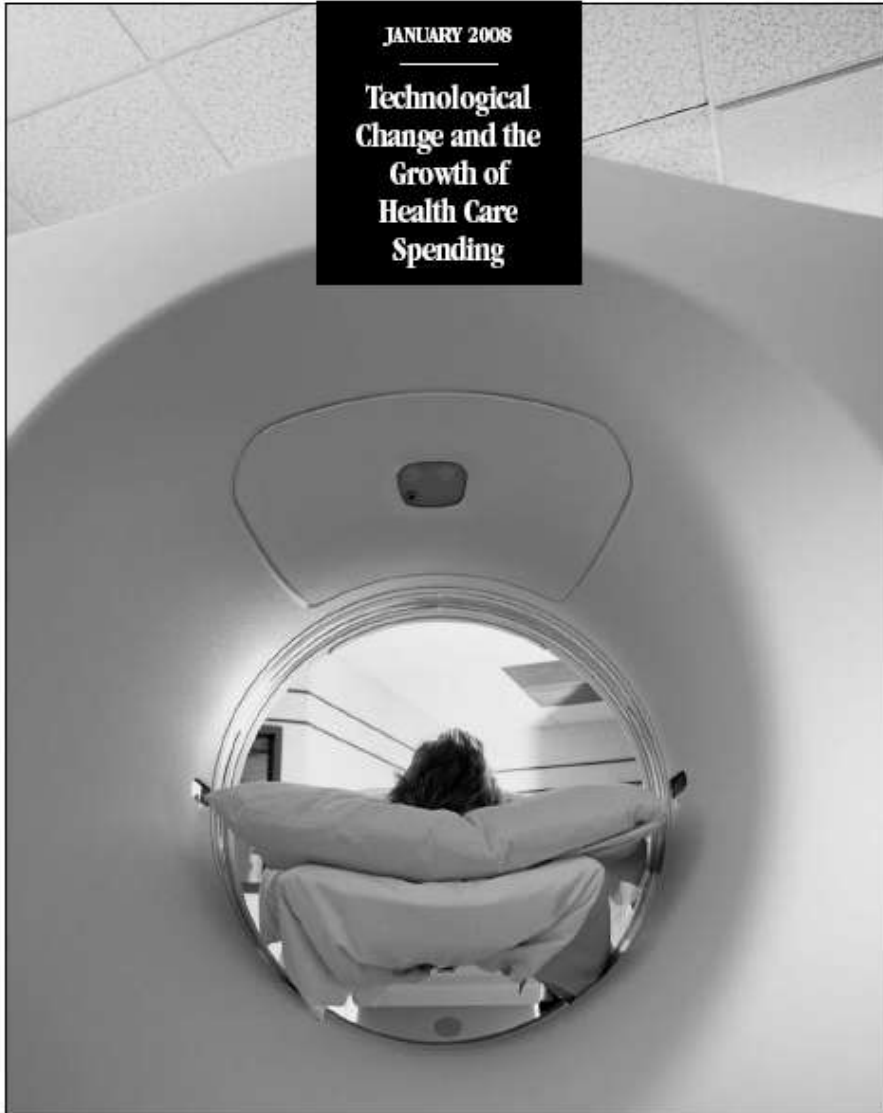
How Much New Technology Can We Afford?



A
CBO
PAPER

JANUARY 2008

**Technological
Change and the
Growth of
Health Care
Spending**



© Stephen Langford/Corbis

“Half of all growth in healthcare spending in the past several decades was associated with changes in care made possible by advances in technology”

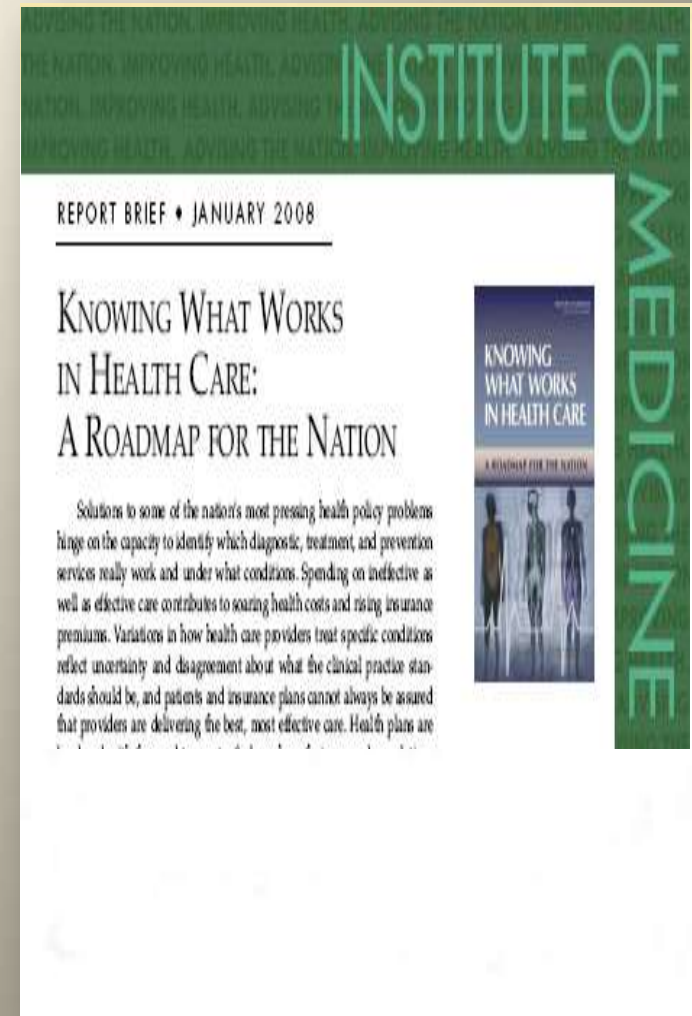
CBO January 2008

Key Questions

- **what is the role of technology innovation in healthcare?**
- **do current public and private strategies support innovation and disruptive technologies?**
- **how should the ‘value’ of new technologies be assessed?**
- **how should dissemination of new value-added technologies be supported?**

The High Price of the Lack of Evidence

- **\$2.3 trillion healthcare economy**
- **\$110 billion R&D investment**
- **\$0.9 billion on technology assessment**
- **additional \$1.2 billion in 2009 “stimulus” package**



Knowing What Works: Healthcare System Performance Assessment

- **allocation of incremental dollars to low-priority care as often or more frequently than high-priority care merely exacerbates current distortions**
- **refine analyses to focus resources where they will do the most good**
- **encourage optimal care via weighted measures that credit high-priority care over low-priority care**
- **lack of investment to devise pragmatic metrics suitable for longitudinal assessment**
- **new incentives for CER**
- **new incentives (carrots and sticks) for obligate adoption**

Comparative Effectiveness Research (CER)

- 2009-877
- American Recovery and Reinvestment Act (ARRA) of 2009
 - P.L. 111.5
- \$1.1 billion
 - NIH (\$400 million)
 - AHRQ (\$300 million)
 - HHS (\$400 million)
- Institute of Medicine (IOM) Report
 - 30 June 2009
 - top 100 priority projects



**Federal Coordinating Council for Comparative Effectiveness Research
Membership**

Recovery Act Allocates \$1.1 Billion for Comparative Effectiveness Research

Comparative Effectiveness Research (CER)

- **superficial appeal of rational policy belies the complexity of rigorous CER**
 - endpoints/outcomes
 - methodological and reporting standardization
 - stringency of patient selection/treatment regimen/compliance
 - prospective versus retrospective data
- **payor engagement and impact on reimbursement policies**
 - predisposition to chose lower cost intervention(s)?
 - risk of abuse and rationing of care

Comparative Effectiveness Research (CER)

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WHO SETS PRIORITIES AND EVALUATION CRITERIA?

Comparative Effectiveness Research (CER)

- predisposition to select unidimensional interventions with quantitative direct costs

versus

- complex, multidimensional interventions and assessment of direct/indirect benefits
- drugs, devices and procedures

versus

- different ways of paying for care

versus

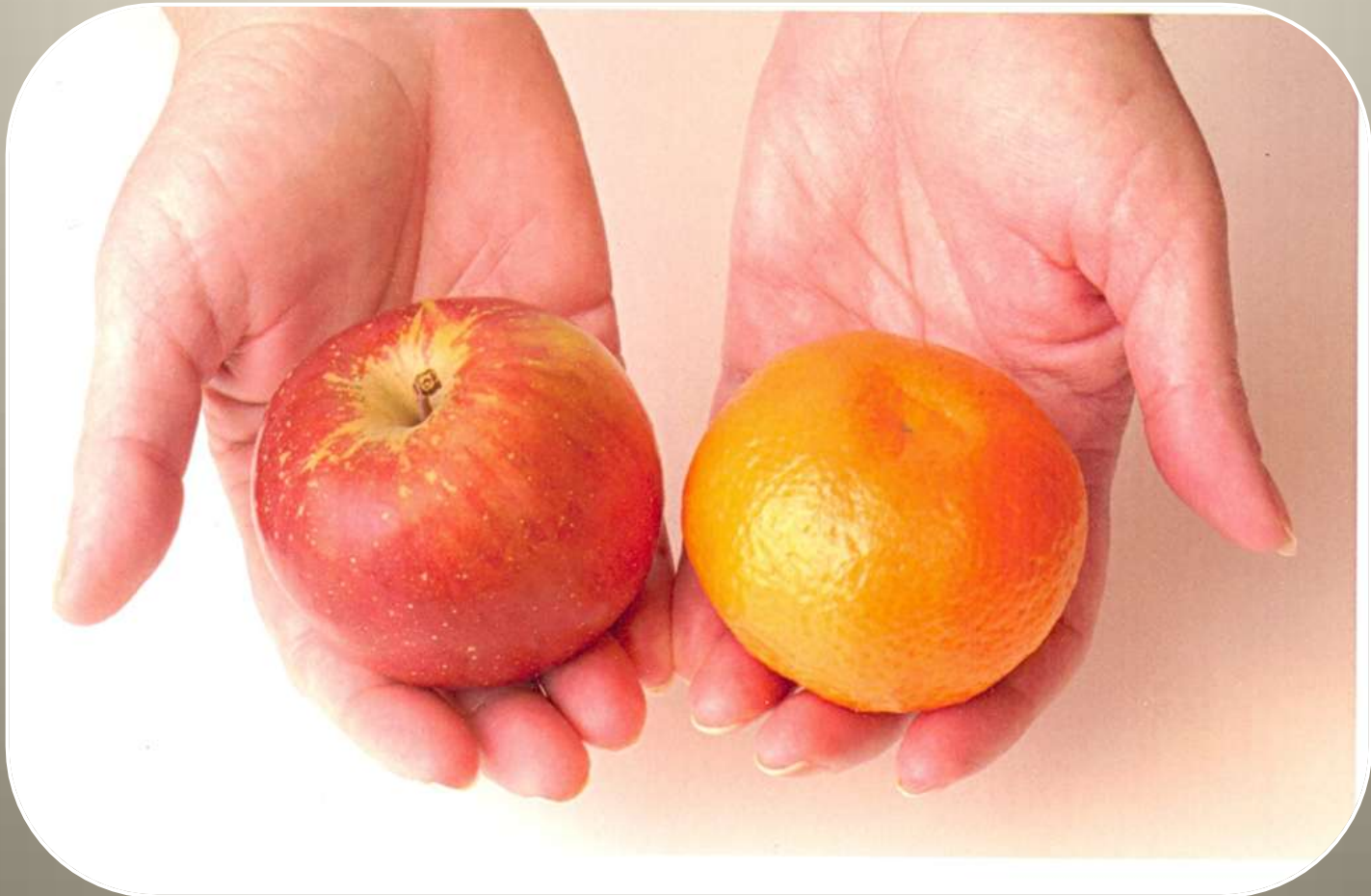
- different organizational models for healthcare delivery

Demonstrating Value: Inadequate Evaluation Methods

- **lack of consensus on outcome metrics and their application**
- **inability to integrate direct (healthcare) and indirect (socio-economic, QOL) costs**
- **inadequate tools to identify ‘compounding’ of health benefits (impact on co-morbidities)**
- **methodological/regulatory/reimbursement policies**
 - **prospective versus retrospective data**
 - **role of randomized clinical trials (time, cost)**
 - **setting guidelines and compliance monitoring**
 - **QALYs: national differences**

**“Not everything that counts can be counted,
and not everything that can be counted, counts”**

Albert Einstein



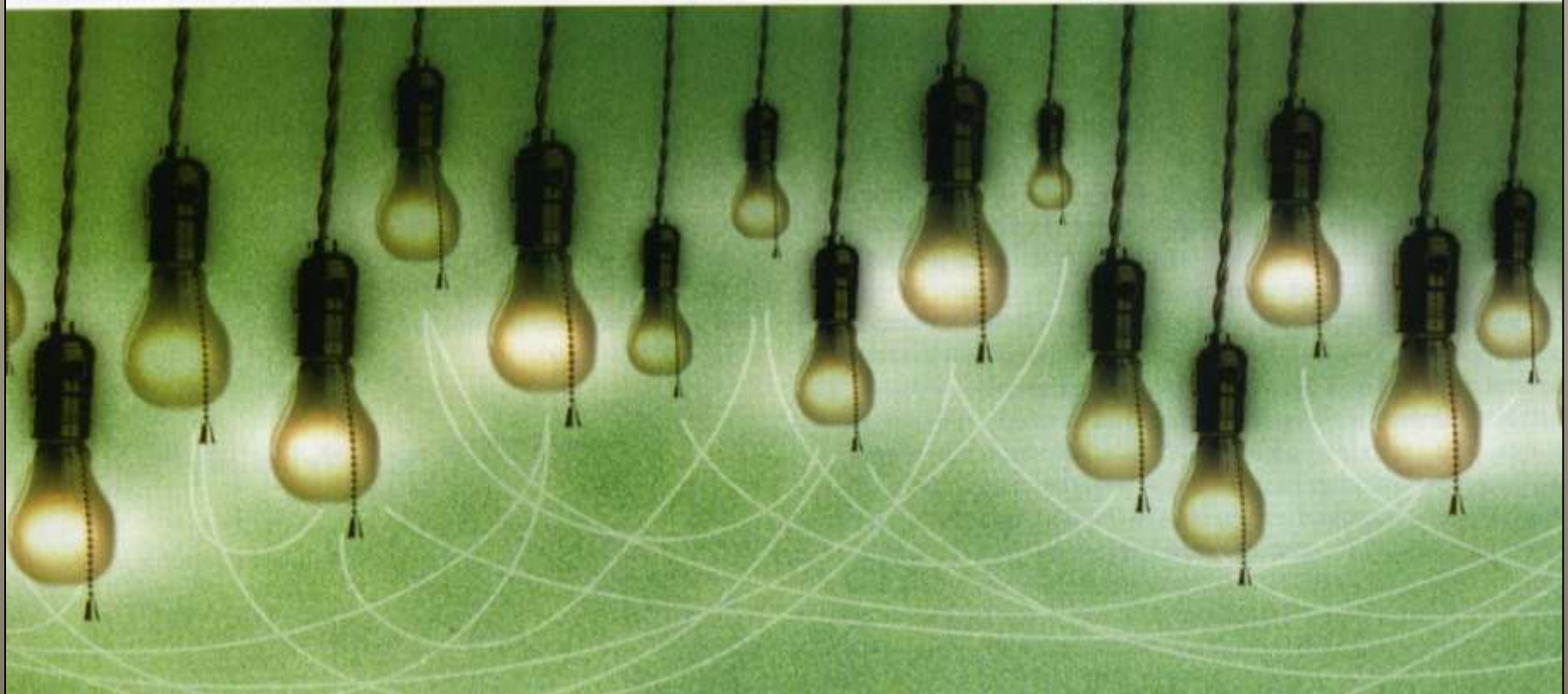
Systems-Based Approaches to Complex, Multi-Dimensional Challenges



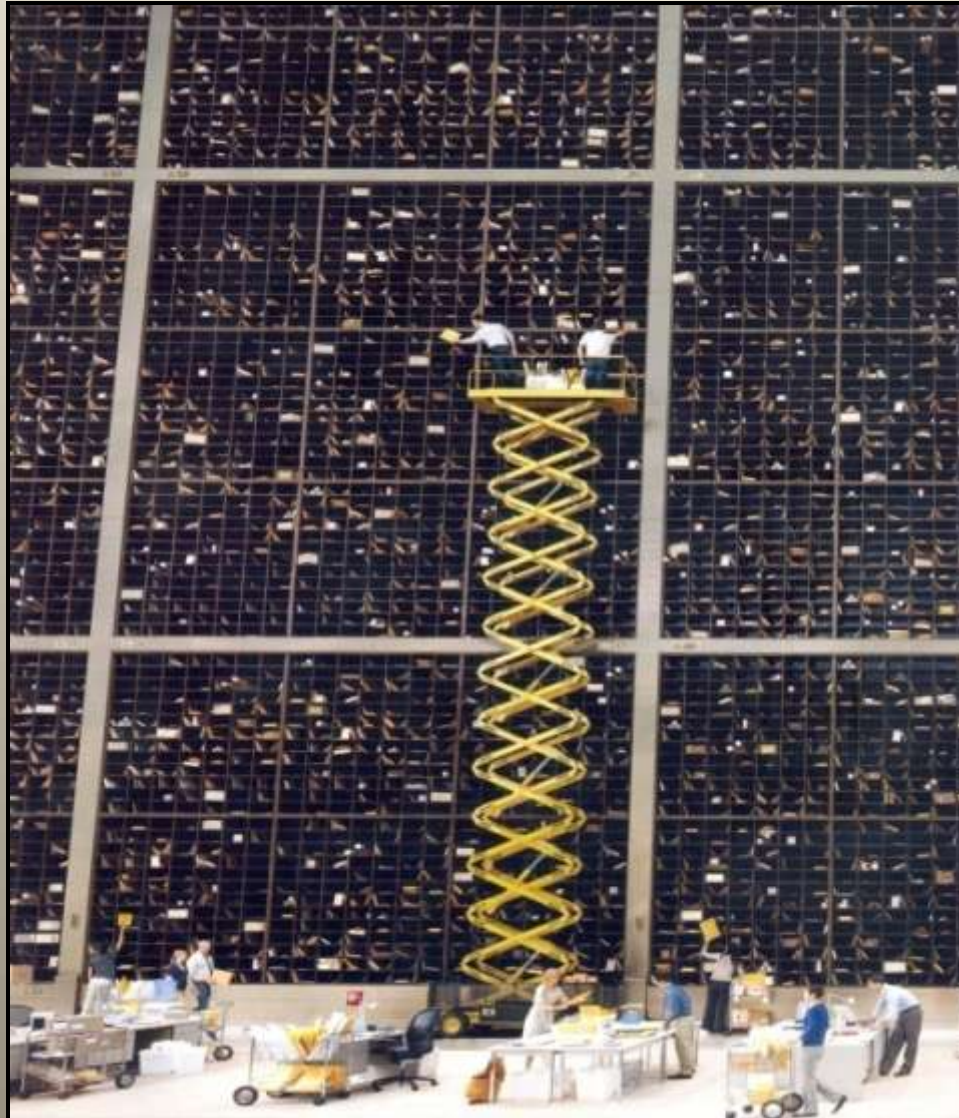
CONNECTIVITY AND INTEGRATED CARE

Information-Based Medicine

HELL IS THE PLACE WHERE NOTHING CONNECTS — T.S. ELIOT



Paper Kills!: **The Inefficiencies and Risks Created by Sustained Dependence on Paper Healthcare Records**



The Unacceptable Cost of Unconnected Healthcare

- **extravagant waste via excessive duplication of tests/procedures**
- **error via lack of crucial data**
- **lack of data capture for outcomes analysis and individual physician performance**
- **failure to capture population-based disease parameters**
 - **sentinel public health/national security**
 - **meta-analysis of outcomes**
 - **drug and device safety and recall**

CONSUMERS

Consumer Directed Healthcare Plans

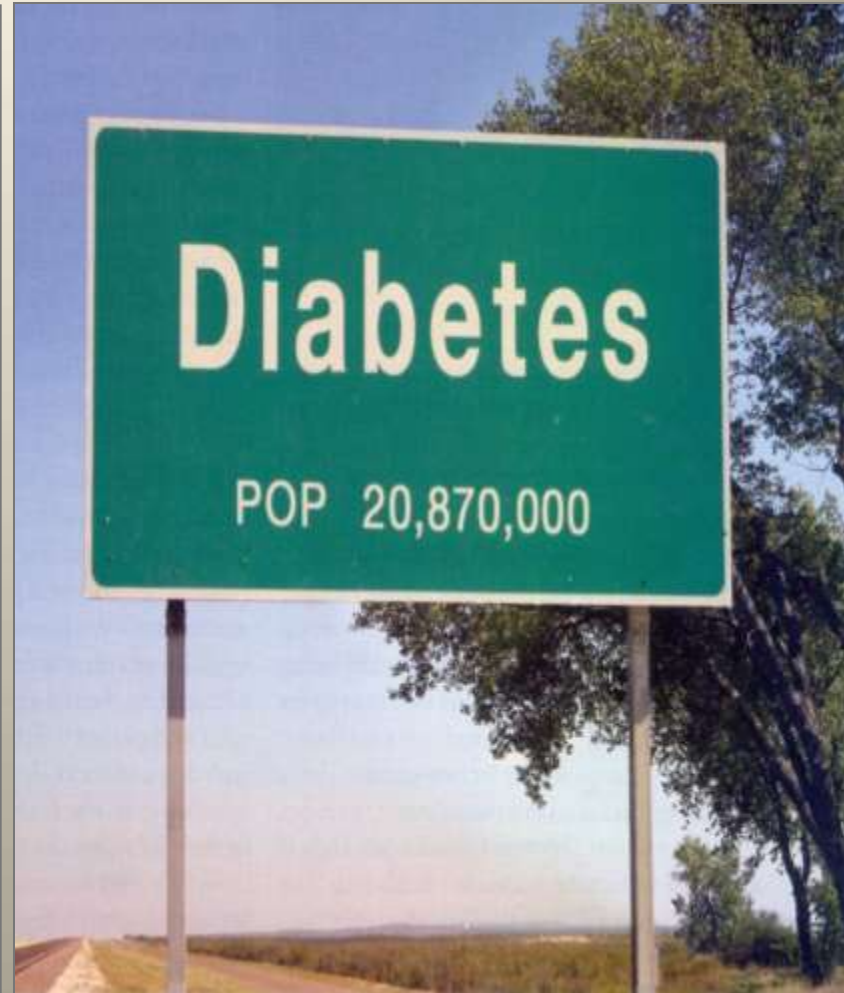
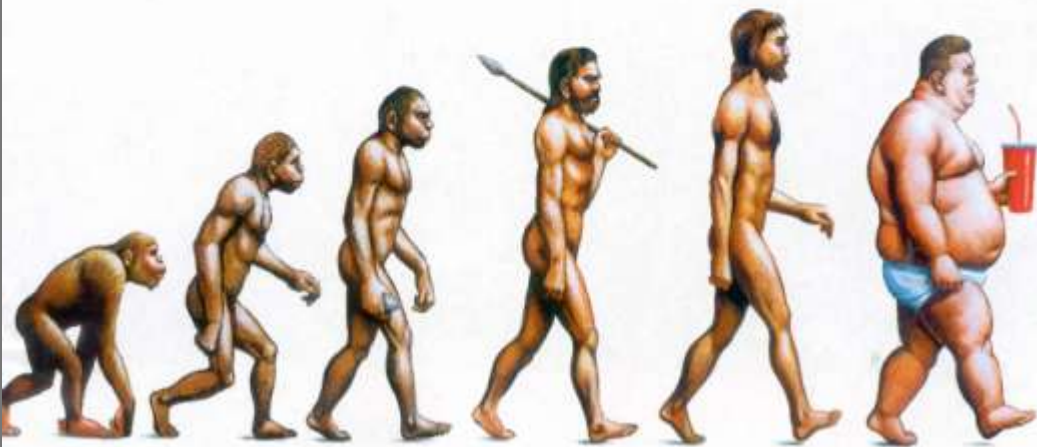
**“Until the person receiving the product is responsible
in some fashion for the costs,
there will be no incentive to spend responsibly”**

**Scott Serota
CEO, BCBS Association of Chicago
Chief Executive Magazine, March 2007 p. 50**

After a Short Stay in America, Michelangelo's David Returned to Europe



The shape of things to come



Annual Excess Healthcare Costs Related to Consumer Behavior

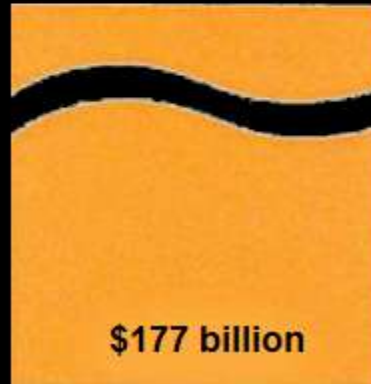
Conditions related to
obesity and overweight



Smoking

\$191 billion

Non-adherence
to drug regimens



Alcohol abuse

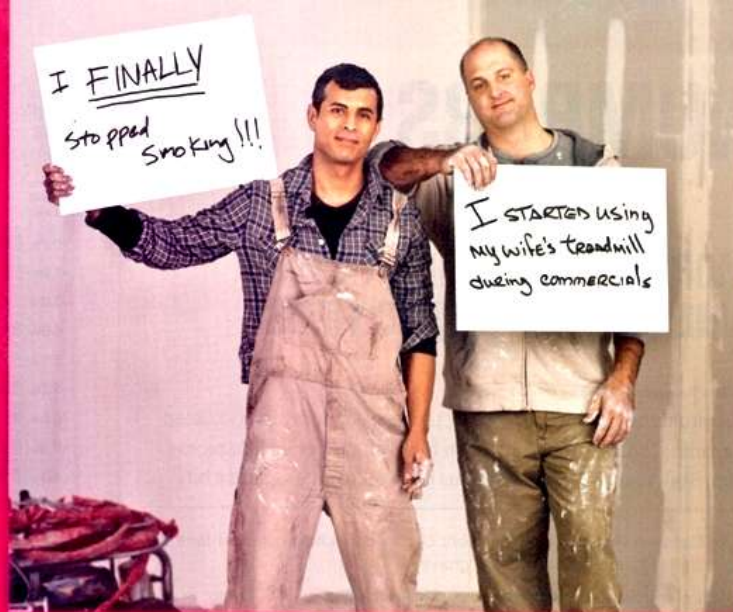
\$2 billion

Source: RTI International & Center for Disease Control and Prevention (200), Datamonitor (2007), Americas Health Insurance Plans (2007), Commonwealth Fund (2007), Agency for Health Research and Quality (2003), Analysis by PricewaterhouseCoopers' Health Research

The Case for Wellness

- **30-60% of health plan claims are related to health risks that are modifiable by nutrition, exercise, stress reduction, etc.**
- **well-managed employer health and productivity management programs return \$6-15 for every dollar spent**
- **cost of smoking: healthcare cost of smoking over a lifetime = \$220K per person = \$40 in healthcare cost per pack of cigarettes smoked!**
- **67% of the US population is overweight or obese, and 22% of current healthcare costs are obesity-related**

Source: Wellness Councils of America



No two employees are alike. And neither are their health decisions.

Your employees' decisions impact not only *their* health, but also your company's costs and productivity. To enable better decisions, UnitedHealthcare is leading the way with personalized health care solutions designed to help people – and businesses – stay healthy.

- Personal health assessments
- Personal wellness programs/tracking
- Personal care consultants
- Personal care plans
- Personal doctor selection
- Personal cost estimators
- Personal health records
- And more

Personalization is the heart of health care.™ Better decisions lead to better results.

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to help your bottom line.**

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uhctogether.com/bizweek

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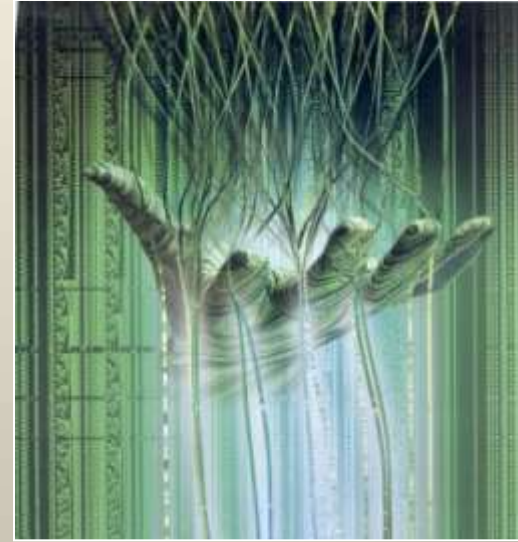
UnitedHealthcare®
Healing health care. Together.®

Personalized Medicine: Consumer-Centric Healthcare: A Key Driver

- **cost-shifting to consumers**
- **clinical and economic benefits of coordinated care of complex chronic conditions**
- **lifestyle and disease risk mitigation**
- **cost-driven transitions from ‘passive patient’ to ‘engaged consumer’**
- **new information intermediaries**

Telecommunications and Media Industry Convergence: Implications for Healthcare

The Infocosm: Emerging Networks of Global Connectivity



The Changing Nature of Social Interaction



Herd Behavior: 1951

**1.3 Million Bathers,
Coney Island, NY**



Herd Behavior: 2009

**Social Networks and Virtual
Communities**



Consumer-Directed Healthcare: The Wellness Premium

- **leveraging social and peer networks**
- **increased role of fitness industry and entertainment in healthcare**
 - **“success via distraction”**
- **“virtual touch”**
 - **web-based consultation and diagnostic algorithms**
 - **emerging generational gap in need for direct physical interaction with physician**
- **evolution of ‘near-patient’ health status profiling**
 - **POC and in-home Dx**
 - **OBIBs**

The Great Network Inflection Point

- multi-billion user internet
- AORTA (always on, real time, access)
- connectivity via low cost, portable, multi-function devices
 - “universal connection devices”
- every piece of information will have geographic and time coordinates
- ubiquitous access plus customized profiling creates a world shaped by individual choices

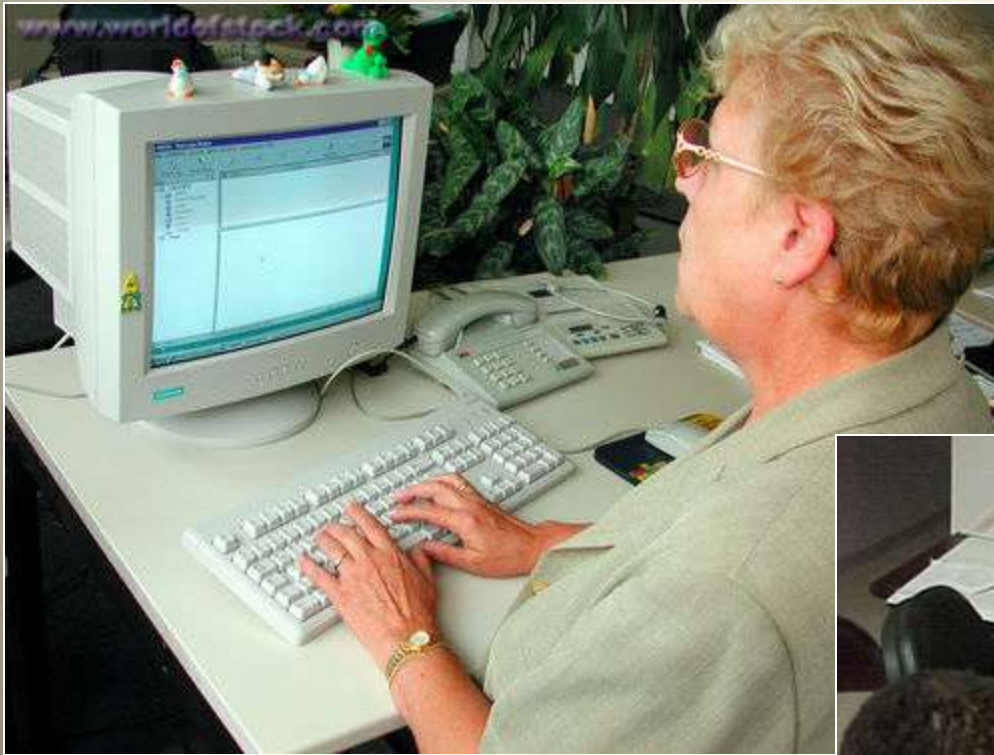
Connecting Patients (and Consumers) to Optimum Healthcare Resources



**PMRs and patient support
networks for linkage to
clinical trials and expertise**

**integrated care of chronic
conditions and
specialty Rx distribution**

In-Home Health Connection: Engaging the Elderly



The Dominant Future Element in Primary Healthcare Delivery???

Walgreens

As far as you want to go.™

**CVS
CAREMARK**

WAL★MART®

Save money. Live better.™



Healthcare Information and Privacy

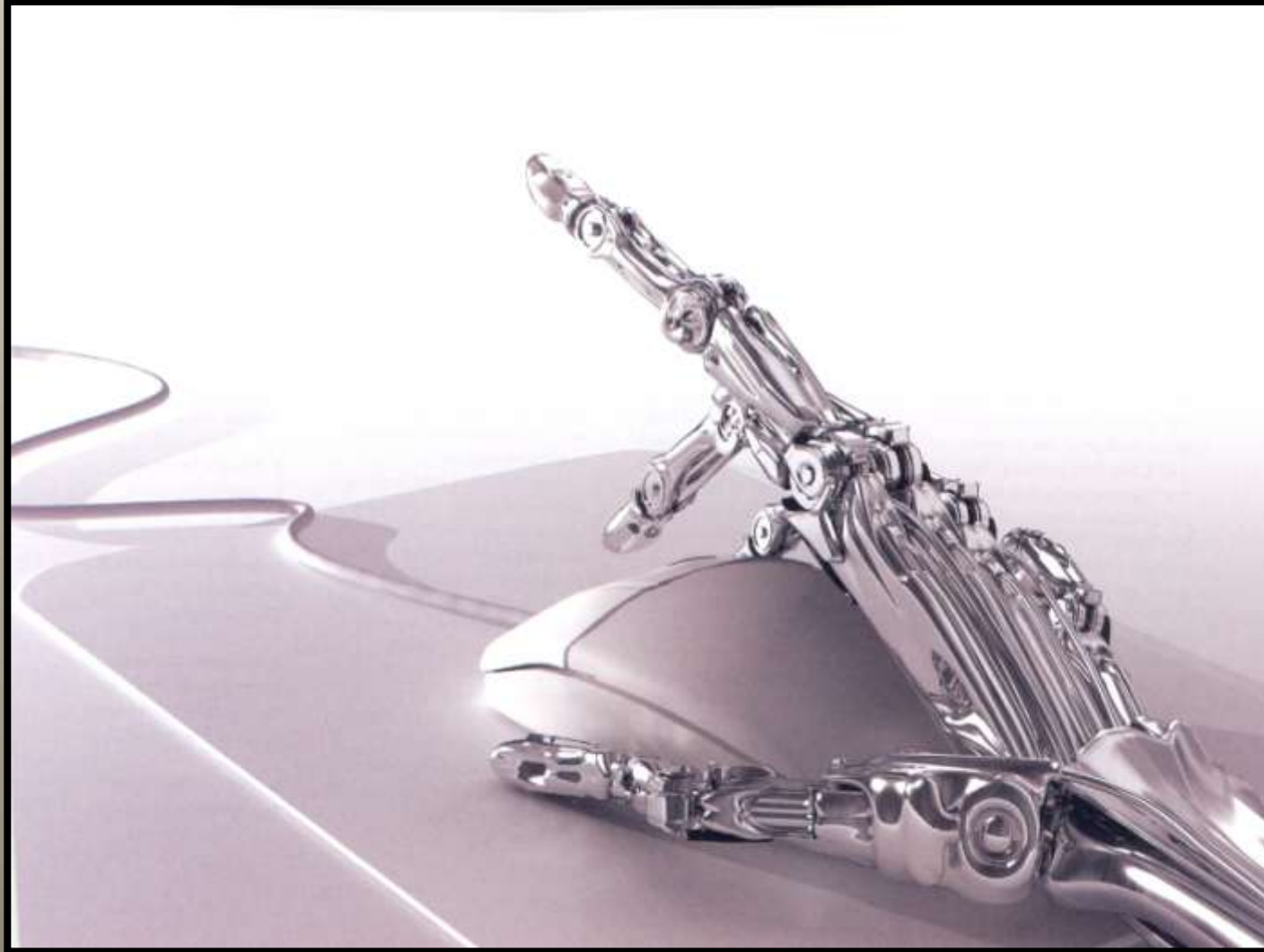
- 2010: 15 Petabits (10^{16}) / \$250,000
- Human Genome: 10 Gigabits (10^{11})

For a few million dollars, one could store the complete genome of every American and European

...for several more, could add credit card records, telephone logs, travel history,...



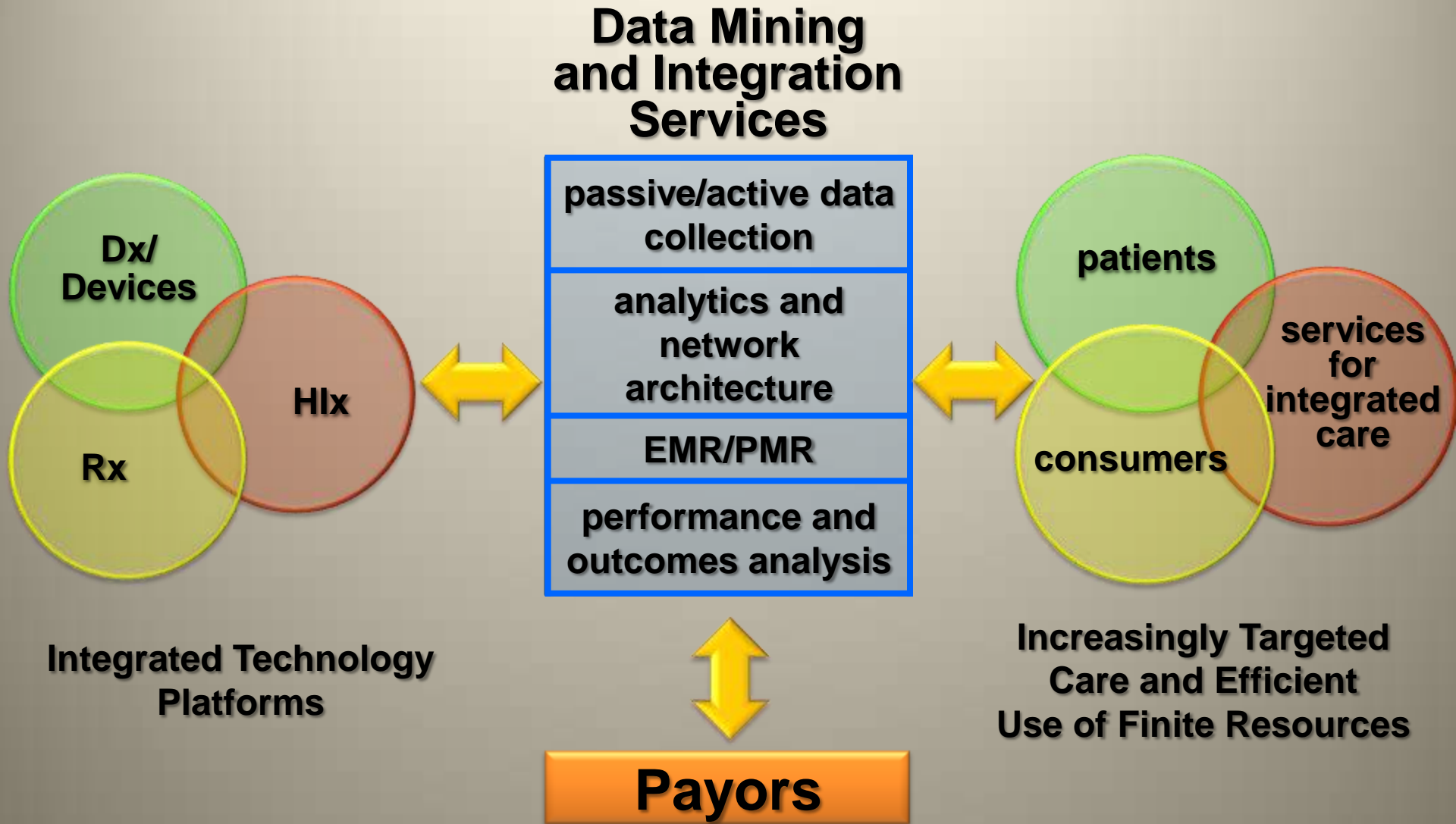
When Will Interoperable Electronic Medical Records Become a Reality?



American Recovery and Reinvestment Act (ARRA) 2009

- **\$19 billion for healthcare IT**
- **Medicare payment up to \$44K for physician with qualifying EHRs (2011)**
- **Medicare reductions for physicians/hospitals that lack qualifying HER by 2014**
- **CPOE by 2011 to qualify for Medicare incentive payments**
- **HITECH: separate new law embedded in ARRA**
 - **Health Information Technology for Economic and Clinical Health (HITECH) Act**
 - **policies/standards for national Hlx network**

A New Healthcare Ecosystem Arising From Technology and Market Convergence



Your potential. Our passion.[™]
Microsoft

we see
one doctor, many experts.

Microsoft is partnering with industry leaders to develop the health care system of the future. By creating a seamless national network that provides a more efficient flow of medical information, health care providers are better informed, patients better served. Find out more at microsoft.com/potential

Creating a New Network of Connected Expertise to Accelerate Innovation in Healthcare Delivery

- **ever faster generation of new information**
- **diversification of innovation sources**
- **current healthcare ecosystem is too fragmented to fully leverage novel content and shared learning**
- **global sourcing**
- **rise of new business models of ‘expertise networks’ that eclipse current monolithic single company innovation models**

From Ambiguity to Certainty: Competitive Superiority via Analysis of a Burgeoning Infocosm

- **new intermediaries for analysis/packaging of healthcare data**
- **global sourcing of data and expertise**
- **lower transactional costs**
- **higher efficiency in use of expensive, finite resources**
- **increasingly predictable cost structure and predictable performance of products and procedures**
- **improved clinical and economic outcomes**

Healthcare Reform: Identification of New Value Drivers

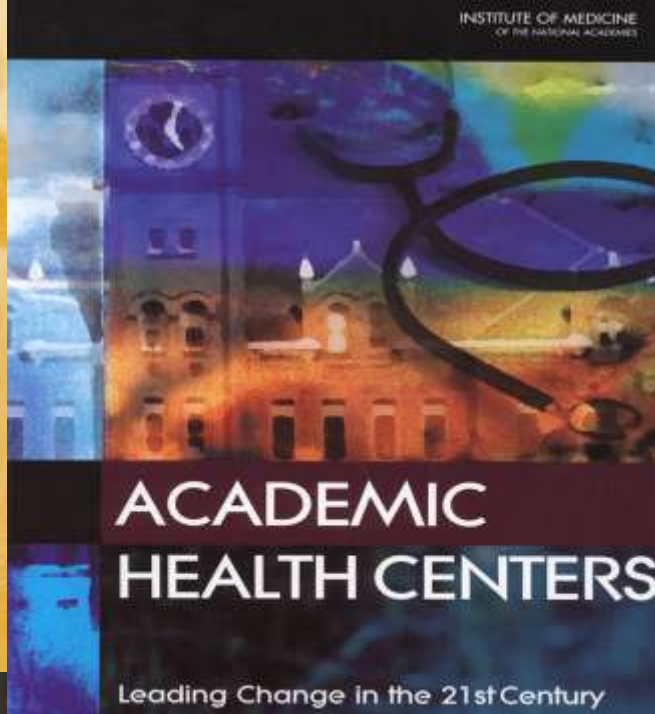
- **precision diagnostics: the most powerful driver of rational care decisions**
- **structural shift in healthcare delivery from encounter-/procedure-driven to incentives for integrated disease management**
- **clinical and economic benefits of coordinated care of complex chronic conditions**
- **cost-shifting to consumers**
- **lifestyle and disease risk mitigation**
- **real-time health information and individual health status tracking**
- **cost-driven transitions from ‘passive patient’ to ‘engaged consumer’**



TRAINING TOMORROW'S DOCTORS

The Medical Education Mission
of Academic Health Centers

A Report of
The Commonwealth Fund Task Force
on Academic Health Centers



ACADEMIC HEALTH CENTERS

Leading Change in the 21st Century

QUALITY CHASM SERIES



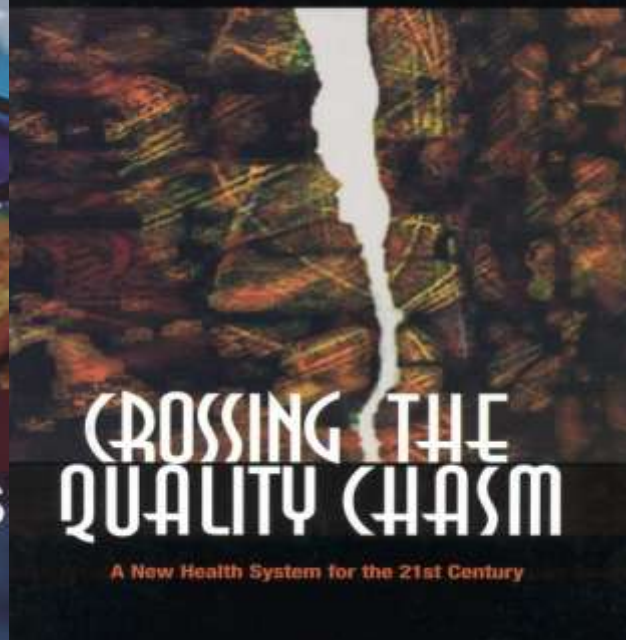
HEALTH PROFESSIONS EDUCATION

A BRIDGE TO QUALITY

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

INSTITUTE OF MEDICINE
OF THE NATIONAL ACADEMIES

INSTITUTE OF MEDICINE



CROSSING THE QUALITY CHASM

A New Health System for the 21st Century



ASSOCIATION OF
AMERICAN
MEDICAL COLLEGES

Educating Doctors to Provide High Quality Medical Care

A Vision for Medical Education in the United States

Report of the Ad Hoc
Committee of Deans



July 2004

Commissioned for the AAMC
Institute for Improving Medical Education

August 2004

ACGME Bulletin



Accreditation Council for Graduate Medical Education

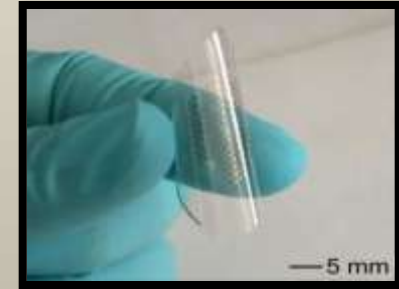
EDITOR'S INTRODUCTION

Graduate Medical Education and Patient Safety

The Accreditation Council for
Graduate Medical Education
publishes the ACGME Bulletin
four times a year. The Bulletin is
distributed free of charge to more
than 12,000 individuals involved in
residency education, and is also

The Urgent Need for Reform of the Medical Education Curriculum

- **molecular medicine**
- **engineering-based medicine**
- **information-based medicine**



The Urgent Need for Reform of the Medical Education Curriculum

- **molecular medicine**
- **engineering-based medicine**
- **information-based medicine**
- **recalibration of the role of the MD in healthcare delivery**
 - from ‘art’ to ‘science’
 - from individual artisan to integrated team player



The Coming Convergence in Healthcare Delivery

Technologies

- **biotechnology, medicine, engineering, computing**

Clinical Practice

- **molecular medicine and increasingly customized care**
- **diagnostic, drug and device combinations**
- **POC testing and remote monitoring**
- **reduced error and improved compliance**
- **improved clinical and economic outcomes**

Realigned Incentives

- **integrated care for complex chronic diseases**
- **earlier disease detection and risk reduction**
- **wellness versus illness**
- **health status monitoring**

The Coming Convergence in Healthcare Delivery

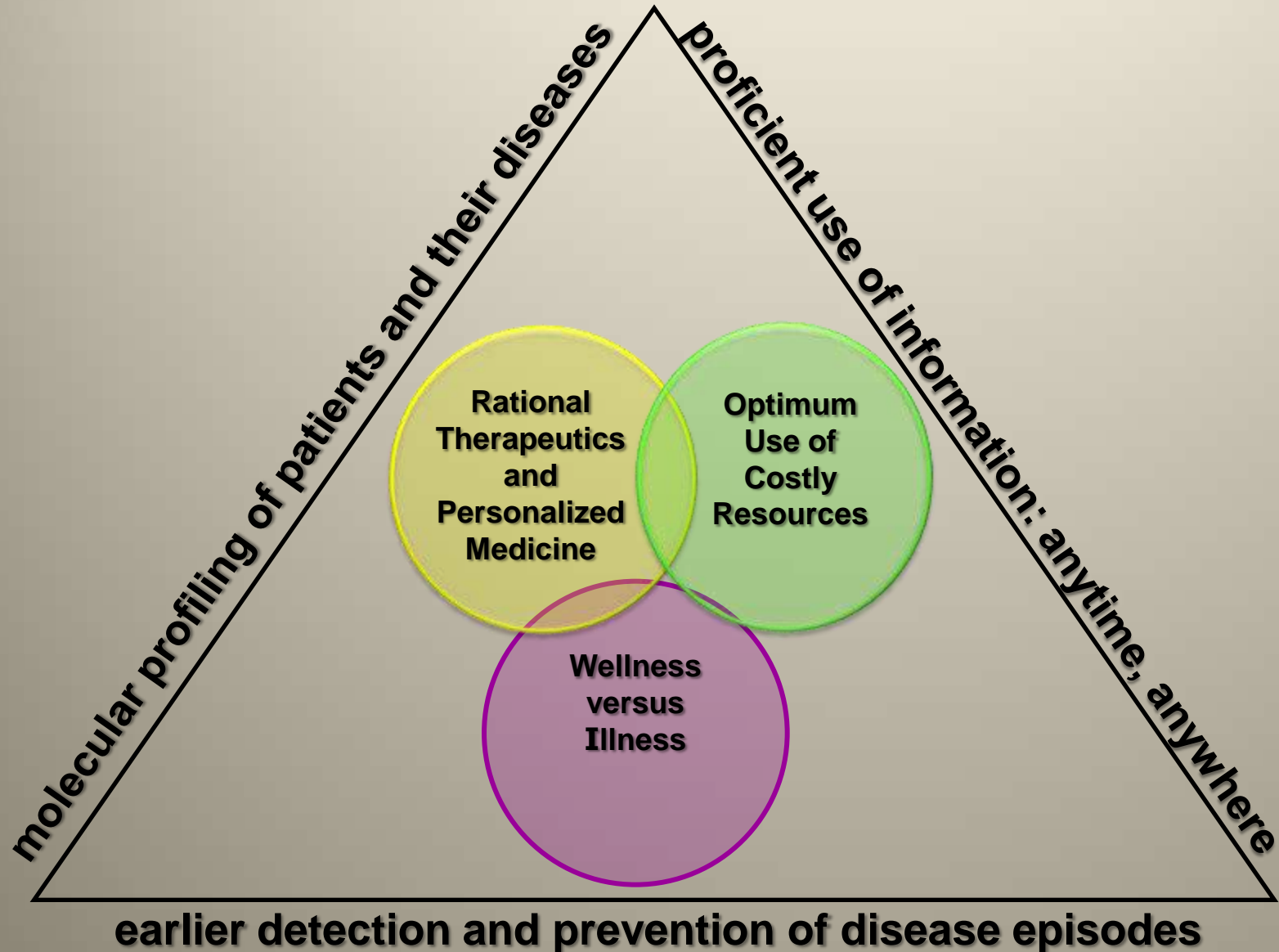
Consumers

- **increased personal responsibility for health**
- **new incentives for wellness/compliance**
- **health status monitoring**

Connectivity

- **integrated care networks for chronic disease**
- **improved outcomes and effectiveness**
- **social networks and informed consumers**
- **new supplier networks of specialized turnkey expertise**
- **value added 'content' services for clinical data mining**

The Urgent Imperative for New Drivers of Efficiency and Equity in Healthcare Delivery



Building an Integrated Framework for Personalized Medicine

